

Release notes for ENDF/B Development photoat-072_Hf_000
evaluation

ENDF
B-VII.dev

October 13, 2016

- checkr Warnings:

1. A previous error halted parsing of the current section
MAT=7200, MF= 1, MT=451 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=7200, MF= 1, MT=451
SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      165 TO      199
```

- checkr Errors:

1. A variable is outside the allowed ENDF range
MAT=7200, MF= 1, MT=451 (0): Variable range

```
ERROR(S) FOUND IN MAT=7200, MF= 1, MT=451
MOD =      3 OUT OF RANGE      0 -      1      RECORD NUMBER      165
```

2. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=501 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=7200, MF=23, MT=501
SECTION 23/501 NOT IN DIRECTORY      RECORD NUMBER      201
```

3. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=502 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=7200, MF=23, MT=502
SECTION 23/502 NOT IN DIRECTORY      RECORD NUMBER      1153
```

4. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=504 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=7200, MF=23, MT=504
SECTION 23/504 NOT IN DIRECTORY      RECORD NUMBER      1599
```

5. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=515 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=7200, MF=23, MT=515
SECTION 23/515 NOT IN DIRECTORY      RECORD NUMBER      1640
```

6. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=516 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=7200, MF=23, MT=516
SECTION 23/516 NOT IN DIRECTORY      RECORD NUMBER      1674
```

7. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=517 (0): Directory (b)

- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=517 | RECORD NUMBER | 1728 |
| SECTION 23/517 NOT IN DIRECTORY | | |
8. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=522 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=522 | RECORD NUMBER | 1769 |
| SECTION 23/522 NOT IN DIRECTORY | | |
9. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=534 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=534 | RECORD NUMBER | 2208 |
| SECTION 23/534 NOT IN DIRECTORY | | |
10. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=535 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=535 | RECORD NUMBER | 2229 |
| SECTION 23/535 NOT IN DIRECTORY | | |
11. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=536 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=536 | RECORD NUMBER | 2253 |
| SECTION 23/536 NOT IN DIRECTORY | | |
12. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=537 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=537 | RECORD NUMBER | 2276 |
| SECTION 23/537 NOT IN DIRECTORY | | |
13. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=538 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=538 | RECORD NUMBER | 2300 |
| SECTION 23/538 NOT IN DIRECTORY | | |
14. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=539 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=539 | RECORD NUMBER | 2326 |
| SECTION 23/539 NOT IN DIRECTORY | | |
15. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=540 (0): Directory (b)

- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=540 | RECORD NUMBER | 2355 |
| SECTION 23/540 NOT IN DIRECTORY | | |
16. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=541 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=541 | RECORD NUMBER | 2384 |
| SECTION 23/541 NOT IN DIRECTORY | | |
17. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=542 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=542 | RECORD NUMBER | 2417 |
| SECTION 23/542 NOT IN DIRECTORY | | |
18. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=543 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=543 | RECORD NUMBER | 2448 |
| SECTION 23/543 NOT IN DIRECTORY | | |
19. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=544 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=544 | RECORD NUMBER | 2478 |
| SECTION 23/544 NOT IN DIRECTORY | | |
20. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=545 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=545 | RECORD NUMBER | 2512 |
| SECTION 23/545 NOT IN DIRECTORY | | |
21. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=546 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=546 | RECORD NUMBER | 2546 |
| SECTION 23/546 NOT IN DIRECTORY | | |
22. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=547 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=7200, MF=23, MT=547 | RECORD NUMBER | 2597 |
| SECTION 23/547 NOT IN DIRECTORY | | |
23. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=548 (0): Directory (b)

- | | | |
|--|---|--------------------|
| | ERROR(S) FOUND IN MAT=7200, MF=23, MT=548 | |
| | SECTION 23/548 NOT IN DIRECTORY | RECORD NUMBER 2649 |
24. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=549 (0): Directory (b)
- | | | |
|--|---|--------------------|
| | ERROR(S) FOUND IN MAT=7200, MF=23, MT=549 | |
| | SECTION 23/549 NOT IN DIRECTORY | RECORD NUMBER 2704 |
25. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=550 (0): Directory (b)
- | | | |
|--|---|--------------------|
| | ERROR(S) FOUND IN MAT=7200, MF=23, MT=550 | |
| | SECTION 23/550 NOT IN DIRECTORY | RECORD NUMBER 2759 |
26. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=551 (0): Directory (b)
- | | | |
|--|---|--------------------|
| | ERROR(S) FOUND IN MAT=7200, MF=23, MT=551 | |
| | SECTION 23/551 NOT IN DIRECTORY | RECORD NUMBER 2798 |
27. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=552 (0): Directory (b)
- | | | |
|--|---|--------------------|
| | ERROR(S) FOUND IN MAT=7200, MF=23, MT=552 | |
| | SECTION 23/552 NOT IN DIRECTORY | RECORD NUMBER 2841 |
28. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=553 (0): Directory (b)
- | | | |
|--|---|--------------------|
| | ERROR(S) FOUND IN MAT=7200, MF=23, MT=553 | |
| | SECTION 23/553 NOT IN DIRECTORY | RECORD NUMBER 2884 |
29. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=554 (0): Directory (b)
- | | | |
|--|---|--------------------|
| | ERROR(S) FOUND IN MAT=7200, MF=23, MT=554 | |
| | SECTION 23/554 NOT IN DIRECTORY | RECORD NUMBER 2950 |
30. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=23, MT=559 (0): Directory (b)
- | | | |
|--|---|--------------------|
| | ERROR(S) FOUND IN MAT=7200, MF=23, MT=559 | |
| | SECTION 23/559 NOT IN DIRECTORY | RECORD NUMBER 3016 |
31. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=27, MT=502 (0): Directory (b)

ERROR(S) FOUND IN MAT=7200, MF=27, MT=502

SECTION 27/502 NOT IN DIRECTORY

RECORD NUMBER 3061

32. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=27, MT=504 (0): Directory (b)

ERROR(S) FOUND IN MAT=7200, MF=27, MT=504

SECTION 27/504 NOT IN DIRECTORY

RECORD NUMBER 3114

33. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=27, MT=505 (0): Directory (b)

ERROR(S) FOUND IN MAT=7200, MF=27, MT=505

SECTION 27/505 NOT IN DIRECTORY

RECORD NUMBER 3168

34. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=7200, MF=27, MT=506 (0): Directory (b)

ERROR(S) FOUND IN MAT=7200, MF=27, MT=506

SECTION 27/506 NOT IN DIRECTORY

RECORD NUMBER 3353

• fudge-4.0 Warnings:

1. generic warning message
reaction label 0: Hf + gamma [coherent] / Product: gamma (Error # 0): Warning

WARNING: coherentScattering is not a valid distribution component for 2-body reaction

2. FIXME: Generic fudge unimplemented message
reaction label 0: Hf + gamma [coherent] / Product: gamma (Error # 2): Generic unimp (c)

WARNING: Checking not yet implemented for pointwise type data

3. generic warning message
reaction label 1: Hf + gamma [incoherent] / Product: gamma (Error # 0): Warning

WARNING: incoherentScattering is not a valid distribution component for 2-body reaction

4. FIXME: Generic fudge unimplemented message
reaction label 1: Hf + gamma [incoherent] / Product: gamma (Error # 2): Generic unimp (c)

WARNING: Checking not yet implemented for piecewise type data

5. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
summedReaction label 26: total (Error # 0): Sumrule

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 100.00%

6. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
summedReaction label 28: photoelectric absorption (Error # 0): Sumrule

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 67.54%

• fudge-4.0 Errors:

1. Calculated and tabulated thresholds don't agree
reaction label 0: Hf + gamma [coherent] / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!

2. 2-body reaction not in center-of-mass frame
reaction label 0: Hf + gamma [coherent] / Product: gamma (Error # 1): 2-body not in COM

WARNING: 2-body reaction not in center-of-mass frame!

3. Calculated and tabulated thresholds don't agree
reaction label 1: Hf + gamma [incoherent] / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!

4. 2-body reaction not in center-of-mass frame
reaction label 1: Hf + gamma [incoherent] / Product: gamma (Error # 1): 2-body not in COM

WARNING: 2-body reaction not in center-of-mass frame!

5. Energy range of data set does not match cross section range
reaction label 1: Hf + gamma [incoherent] / Product: gamma / Distribution incoherentScattering - piecewise: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (0.0 -> 1000000000.0) vs (1.0 -> 1e+11)

6. Calculated and tabulated thresholds don't agree
reaction label 2: e- + e+ + Hf [electron field] / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2.044e6 eV!

7. Calculated and tabulated thresholds don't agree
reaction label 3: e- + e+ + Hf [nuclear field] / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!

8. Calculated and tabulated thresholds don't agree
reaction label 4: e- + Hf1s1/2 / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 65482. eV!

9. Calculated and tabulated thresholds don't agree
reaction label 5: e- + Hf2s1/2 / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 11245. eV!

10. Calculated and tabulated thresholds don't agree
reaction label 6: $e^- + \text{Hf}2p1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 10763. eV!
11. Calculated and tabulated thresholds don't agree
reaction label 7: $e^- + \text{Hf}2p3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 9558.299999999999 eV!
12. Calculated and tabulated thresholds don't agree
reaction label 8: $e^- + \text{Hf}3s1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2576. eV!
13. Calculated and tabulated thresholds don't agree
reaction label 9: $e^- + \text{Hf}3p1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2358.1 eV!
14. Calculated and tabulated thresholds don't agree
reaction label 10: $e^- + \text{Hf}3p3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2099. eV!
15. Calculated and tabulated thresholds don't agree
reaction label 11: $e^- + \text{Hf}3d3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1725.5 eV!
16. Calculated and tabulated thresholds don't agree
reaction label 12: $e^- + \text{Hf}3d5/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1668.7 eV!
17. Calculated and tabulated thresholds don't agree
reaction label 13: $e^- + \text{Hf}4s1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 525.6900000000001 eV!
18. Calculated and tabulated thresholds don't agree
reaction label 14: $e^- + \text{Hf}4p1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 435.27 eV!
19. Calculated and tabulated thresholds don't agree
reaction label 15: $e^- + \text{Hf}4p3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 375.82 eV!
20. Calculated and tabulated thresholds don't agree
reaction label 16: $e^- + \text{Hf}4d3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 225.59 eV!

21. Calculated and tabulated thresholds don't agree
reaction label 17: $e^- + \text{Hf}4d5/2$ / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 214.71 eV!
22. Calculated and tabulated thresholds don't agree
reaction label 18: $e^- + \text{Hf}4f5/2$ / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 27.26 eV!
23. Calculated and tabulated thresholds don't agree
reaction label 19: $e^- + \text{Hf}4f7/2$ / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 25.4 eV!
24. Calculated and tabulated thresholds don't agree
reaction label 20: $e^- + \text{Hf}5s1/2$ / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 72.56 eV!
25. Calculated and tabulated thresholds don't agree
reaction label 21: $e^- + \text{Hf}5p1/2$ / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 46.34 eV!
26. Calculated and tabulated thresholds don't agree
reaction label 22: $e^- + \text{Hf}5p3/2$ / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 38.1 eV!
27. Calculated and tabulated thresholds don't agree
reaction label 23: $e^- + \text{Hf}5d3/2$ / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 5.75 eV!
28. Calculated and tabulated thresholds don't agree
reaction label 24: $e^- + \text{Hf}5d5/2$ / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 5.18 eV!
29. Calculated and tabulated thresholds don't agree
reaction label 25: $e^- + \text{Hf}6s1/2$ / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6.86 eV!
30. Calculated and tabulated thresholds don't agree
summedReaction label 26: total / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
31. Calculated and tabulated thresholds don't agree
summedReaction label 27: pair product / Cross section: (Error # 0): Threshold mismatch
- WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!

32. Calculated and tabulated thresholds don't agree
summedReaction label 28: photoelectric absorption / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 5.18 eV!

• xsectplotter Warnings:

1. Encountered runtime warning in xsectplotter or Fudge or matplotlib
Error: RuntimeWarning

stderr while processing crossSection

/usr/local/lib/python2.7/site-packages/matplotlib-1.3.1-py2.7-linux-x86_64.egg/matplotlib/pyplot.py:412: RuntimeWarning: ... [3 more lines]